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=> d his

     (FILE 'HOME' ENTERED AT 13:44:42 ON 11 JUL 2003)

     FILE 'EUROPATFULL, PATDPAFULL, PCTFULL, RDISCLOSURE, USPATFULL, USPAT2'
     ENTERED AT 13:46:46 ON 11 JUL 2003
               E CHERR G/IN

     FILE 'CAPLUS' ENTERED AT 13:47:39 ON 11 JUL 2003
               E CHERR G/IN

     FILE 'MEDLINE' ENTERED AT 13:48:14 ON 11 JUL 2003
               E CHERR G/AU
L1            44 S E3-E6
L2             3 S L1 AND (SULFON? OR ?SULFONIC OR LIGNIN)

     FILE 'REGISTRY' ENTERED AT 13:52:39 ON 11 JUL 2003
L3             1 S 9005-53-2/RN
                 SET NOTICE 1 DISPLAY
                 SET NOTICE LOGIN DISPLAY

     FILE 'REGISTRY' ENTERED AT 13:53:03 ON 11 JUL 2003
                 SET TERMSET E#
                 DEL SEL Y
                 SEL L3 1 RN
L4             1 S E1/RN
                 SET TERMSET LOGIN

     FILE 'BIOSIS' ENTERED AT 13:53:07 ON 11 JUL 2003
L5          6849 S L4

     FILE 'CAPLUS' ENTERED AT 13:53:38 ON 11 JUL 2003
               E CHERR G/AU
L6            47 S E3-E6
L7             5 S L6 AND (SULFON? OR ?SULFONIC OR LIGNIN)
               E PRIMAKOFF/AU
L8            72 S E6-E8
L9             0 S L8 AND (SULFON? OR ?SULFONIC OR LIGNIN)
L10           66 S L8 NOT PY>=2002
L11            0 S L10 AND SULFA?

     FILE 'EUROPATFULL, PATDPAFULL, PCTFULL, RDISCLOSURE, USPATFULL, USPAT2'
     ENTERED AT 14:19:58 ON 11 JUL 2003
               E PRIMAKOFF P/IN
L12            5 S E4-E5
L13            5 S L12 AND (SPERM? OR FERTILI? OR EGG OR INHIBIT? OR CONTRACEPT?

=> s l13 and (SULFON? OR ?SULFONIC OR LIGNIN or SULFA?)
   1 FILES SEARCHED...
   3 FILES SEARCHED...
L14            0 L13 AND (SULFON? OR ?SULFONIC OR LIGNIN OR SULFA?)
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=> e  CHERR G/in
'IN' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'RDISCLOSURE'
E1            1     CHERQUI SIMONE/IN
E2            2     CHERR/IN
E3            0 --> CHERR G/IN
E4            3     CHERR GARY N/IN
E5            3     CHERRADI/IN
E6            2     CHERRADI YOUNES/IN
E7            1     CHERRADI YOUNES LONDON NW2 3TN GB/IN
E8            3     CHERRAK/IN
E9            1     CHERRAK IIHEM/IN
E10           2     CHERRAK ILHEM/IN
E11           7     CHERRE/IN
E12           1     CHERRE VINCENT W/IN
The indicated field code is not available for EXPAND in this
file.  To see a list of valid EXPAND field codes, enter HELP
SFIELDS at an arrow prompt (=>).

=> s e4
'IN' IS NOT A VALID FIELD CODE
L1            3 "CHERR GARY N"/IN

=> d ibib 1-3

L1     ANSWER 1 OF 3     EPFULL   COPYRIGHT 2005 EPO/FIZ KA on STN

ACCESSION NUMBER:        2003:7680  EPFULL
UPDATE DATE PUBLICAT.:   20050309
DATA UPDATE DATE:        20050309
DATA UPDATE WEEK:        200510
TITLE (ENGLISH):         THE USE OF SULFONATED COMPOUNDS AS A BARRIER
                         CONTRACEPTIVE
TITLE (FRENCH):          UTILISATION DE COMPOSES SULFONES EN TANT QUE
                         CONTRACEPTIF LOCAL
INVENTOR(S):             CHERR, Gary, N., 4971 Acacia Way, Penngrove, CA
                         94951, US; SALINAS, Edward, R., 180 Fairmont
                         Avenue, Vallejo, CA 94590, US
PATENT APPLICANT(S):     The Regents of the University of California, (Regents
                         of the University of California, The; University of
                         California, The Regents of the; California, The Regents
                         of the University of), 1111 Franklin Street, 12th
                         Floor, Oakland, CA 94607-5200, US
PATENT APPL. NUMBER:     2289354
LANGUAGE OF FILING:      English
LANGUAGE OF PUBL.:       English
LANGUAGE OF PROCEDURE:   English
LANGUAGE OF TITLE:       English; French
DOCUMENT TYPE:           Patent
PATENT INFO TYPE:        WOA2 International application published without search
                         report
PATENT INFORMATION:
PATENT INFORMATION:
                         NUMBER              KIND     DATE
                         NUMBER              KIND     DATE
                         ---------------------------------
                         WO 2003059197         A2 20030724
                         ---------------------------------
                         WO 2003059197         A3 20040226
DESIGNATED STATES:       AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI
                         LU MC NL PT SE SI SK TR
APPLICATION INFO.:       EP 2003-713251        A  20030114
                         WO 2003-US1324        A  20030114
PRIORITY INFO.:          US 2002-349144P       P  20020115
                         US 2002-76902         A  20020213

L1     ANSWER 2 OF 3     PCTFULL   COPYRIGHT 2005 Univentio on STN
ACCESSION NUMBER:        2003059197 PCTFULL  ED 20030731  EW 200330
```

own PCT

Application instant invention

TITLE (ENGLISH): THE USE OF SULFONATED COMPOUNDS AS A BARRIER CONTRACEPTIVE

TITLE (FRENCH): UTILISATION DE COMPOSES SULFONES EN TANT QUE CONTRACEPTIF LOCAL

INVENTOR(S): **CHERR, Gary, N., 4971 Acacia Way, Penngrove, CA 94951, US [US, US];**
SALINAS, Edward, R., 180 Fairmont Avenue, Vallejo, CA 94590, US [US, US]

PATENT ASSIGNEE(S): THE REAGENTS OF THE UNIVERSITY OF CALIFORNIA, 1111 Franklin Street, 12th Floor, Oakland, CA 94607-5200, US [US, US], for all designates States except US;
CHERR, Gary, N., 4971 Acacia Way, Penngrove, CA 94951, US [US, US], for US only;
SALINAS, Edward, R., 180 Fairmont Avenue, Vallejo, CA 94590, US [US, US], for US only

AGENT: QUINE, Jonathan, Alan$, Quine Intellectual Property Law Group, P.C., P.O. Box 458, Alameda, CA 94501$, US

LANGUAGE OF FILING: English

LANGUAGE OF PUBL.: English

DOCUMENT TYPE: Patent

PATENT INFORMATION:

NUMBER	KIND	DATE
WO 2003059197	A2	20030724

DESIGNATED STATES

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

RW (ARIPO): GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

RW (EAPO): AM AZ BY KG KZ MD RU TJ TM

RW (EPO): AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI SK TR

RW (OAPI): BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

APPLICATION INFO.: WO 2003-US1324 A 20030114

PRIORITY INFO.: US 2002-60/349,144 20020115
US 2002-10/076,902 20020213

"instant application"

L1 ANSWER 3 OF 3 USPATFULL on STN

ACCESSION NUMBER: 2003:194992 USPATFULL

TITLE: Use of sulfonated compounds as a barrier contraceptive

INVENTOR(S): **Cherr, Gary N.**, Penngrove, CA, UNITED STATES
Salinas, Edward R., Vallejo, CA, UNITED STATES

PATENT ASSIGNEE(S): The Regents of the University of California, Oakland, CA, 946075200 (U.S. corporation)

NUMBER	KIND	DATE	
PATENT INFORMATION: US 2003134803	A1	20030717	
APPLICATION INFO.: US 2002-76902	A1	20020213	(10)

NUMBER	DATE
PRIORITY INFORMATION: US 2002-349144P	20020115 (60)

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C., P O BOX 458, ALAMEDA, CA, 94501

NUMBER OF CLAIMS: 55

EXEMPLARY CLAIM: 1

NUMBER OF DRAWINGS: 6 Drawing Page(s)

LINE COUNT: 1403

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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     FILE 'MEDLINE, EMBASE, BIOSIS' ENTERED AT 14:02:17 ON 23 MAY 2005
                E CHERR G/AU
L2           192 S E3,E7,E4, E6
L3           107 DUP REM L2 (85 DUPLICATES REMOVED)

=> s l3 and (Lignosulfon? or Lignin or lsa or Lignosulfonate or Lignosulfate or  Sulfolignin)
L4             7 L3 AND (LIGNOSULFON? OR LIGNIN OR LSA OR LIGNOSULFONATE OR
                 LIGNOSULFATE OR SULFOLIGNIN)

=> d ibib abs kwic 1-7

L4   ANSWER 1 OF 7     MEDLINE on STN
ACCESSION NUMBER:    2003479903     MEDLINE
DOCUMENT NUMBER:     PubMed ID: 12773404
TITLE:               ESP13.2, a member of the beta-defensin family, is a macaque
                     sperm surface-coating protein involved in the capacitation
                     process.
COMMENT:             Erratum in: Biol Reprod. 2004 Jan;70(1):260
AUTHOR:              Yudin Ashley I; Tollner Theodore L; Li Ming-Wen; Treece
                     Cathy A; Overstreet James W; Cherr Gary N
CORPORATE SOURCE:    Department of Obstetrics and Gynecology, Division of
                     Reproductive Biology, University of California, Davis
                     94923, USA.
SOURCE:              Biology of reproduction, (2003 Oct) 69 (4) 1118-28.
                     Electronic Publication: 2003-05-28.
                     Journal code: 0207224. ISSN: 0006-3363.
PUB. COUNTRY:        United States
DOCUMENT TYPE:       Journal; Article; (JOURNAL ARTICLE)
LANGUAGE:            English
FILE SEGMENT:        Priority Journals
OTHER SOURCE:        GENBANK-AJ236909
ENTRY MONTH:         200312
ENTRY DATE:          Entered STN: 20031016
                     Last Updated on STN: 20031219
                     Entered Medline: 20031211
AB   Female macaques produced isoantibodies to a limited number of sperm
     surface proteins following immunization with sperm components released by
     phosphatidylinositol-specific phospholipase C (PI-PLC). Washed,
     acrosome-intact, fixed sperm injected into rabbits elicited a major immune
     response to one of the same PI-PLC-released proteins, which was shown to
     be a sperm surface-coating protein. After purification and digestion of
     the glycoprotein, four peptides were analyzed for amino acid sequence, and
     all had 100% homology with an epididymal secretory protein, ESP13.2,
     reported previously to be a small, cationic-rich peptide and a member of
     the beta-defensin family. Antibodies to purified ESP13.2 recognized a
     number of protein bands on Western blots of nonreduced PI-PLC-released
     sperm components and nonreduced whole-sperm extracts. After chemical
     disulfide reduction, only a single, broad band from 31 to 35 kDa was
     recognized by anti-ESP13.2 antibodies. Indirect immunofluorescence showed
     ESP13.2 over the entire surface of ejaculated macaque sperm. Fluorescence
     was only slightly reduced after sperm were washed through 80% Percoll. A
     24-h incubation in capacitating medium significantly reduced the amount of
     ESP13.2 over the head and midpiece, whereas exposure of the incubated
     sperm to dbcAMP and caffeine (capacitation activators) resulted in almost
     complete loss of ESP13.2 from the sperm surface. After activation,
     ESP13.2 was the primary component released into the medium as judged
     electrophoretically. Lignosulfonic acid, a potent inhibitor of
     macaque fertilization in vitro, completely blocked release of ESP13.2 from
     the sperm surface, even following treatment with activators. These
     findings suggest that the beta-defensin, ESP13.2, has a function in the
     capacitation of macaque spermatozoa and may modulate sperm
     surface-receptor presentation at the time of fertilization.
AU   Yudin Ashley I; Tollner Theodore L; Li Ming-Wen; Treece Cathy A;
     Overstreet James W; Cherr Gary N
AB   . . . of ESP13.2 from the sperm surface. After activation, ESP13.2 was
     the primary component released into the medium as judged
     electrophoretically. Lignosulfonic acid, a potent inhibitor of
     macaque fertilization in vitro, completely blocked release of ESP13.2 from
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the sperm surface, even following. . .
CT . . .
Caffeine
Cell Membrane: CH, chemistry
Cell Membrane: IM, immunology
*Cell Membrane: ME, metabolism
Genitalia, Male: CH, chemistry
Isoantibodies: IM, immunology
***Lignin: AA, analogs & derivatives**
Lignin: PD, pharmacology
*Macaca fascicularis: PH, physiology
Microscopy, Fluorescence
Molecular Sequence Data
Rabbits
Sperm Capacitation: DE, drug effects
*Sperm Capacitation:. . .
RN 58-08-2 (Caffeine); 8062-15-5 (lignosulfuric acid); **9005-53-2 (Lignin)**

L4 ANSWER 2 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2003026793 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12533433
TITLE: Real-time observations of individual macaque sperm undergoing tight binding and the acrosome reaction on the zona pellucida.
AUTHOR: Tollner Theodore L; Yudin Ashley I; **Cherr Gary N**; Overstreet James W
CORPORATE SOURCE: Department of Obstetrics and Gynecology, University of California, Davis, California 95616, USA.
CONTRACT NUMBER: P51-RR00169 (NCRR)
U54-HD29125 (NICHD)
SOURCE: Biology of reproduction, (2003 Feb) 68 (2) 664-72.
Journal code: 0207224. ISSN: 0006-3363.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200308
ENTRY DATE: Entered STN: 20030122
Last Updated on STN: 20030802
Entered Medline: 20030801
AB Changes in binding affinity, acrosomal status, and motility of living sperm on the zona pellucida were for the first time in any mammalian species directly observed and analyzed with video microscopy. A single zona was air-dried and rehydrated on a microscope slide, and a coverslip supported by glass beads was added. Capacitated sperm were added together with Alexa-SBTI, a probe for acrosin that can detect the acrosome reaction. The heads of loosely attached sperm oscillated on the zona and the flagella beat symmetrically with a sigmoid-shaped waveform. Tight binding was observed after 16 sec as the sperm head became fixed in place on the zona. The shape of the flagellar beat simultaneously shifted to a more rigid, C-shaped waveform. The first signs of the acrosome reaction were detected within 11 sec of tight binding. Rapid flushing removed approximately 65% of sperm that were loosely attached but only 2% of those that were tightly bound. In the 2 min following the onset of tight binding, the lateral displacement of the flagellum increased by approximately 30% and the beat frequency decreased by 25%. **Lignosulfonic** acid (**LSA**) inhibited loose sperm attachment and the development of tight binding. **LSA** had no effect on the time of the acrosome reaction following tight binding or on changes in motility that followed tight binding. These data suggest that **LSA** affects the initial attachment or docking of sperm to the zona, a step that may align or recruit one or more specific zona receptors to be responsible for mediating the acrosome reaction.
AU Tollner Theodore L; Yudin Ashley I; **Cherr Gary N**; Overstreet James W
AB . . . of tight binding, the lateral displacement of the flagellum increased by approximately 30% and the beat frequency decreased by 25%.

Lignosulfonic acid (**LSA**) inhibited loose sperm attachment and the development of tight binding. **LSA** had no effect on the time of the acrosome reaction following tight binding or on changes in motility that followed tight binding. These data suggest that **LSA** affects the initial attachment or docking of sperm to the zona, a step that may align or recruit one or. . .

CT Check Tags: Female; Male
*Acrosome Reaction: PH, physiology
Animals
*Computer Systems
***Lignin: AA, analogs & derivatives**
Lignin: PD, pharmacology
Macaca fascicularis
Research Support, Non-U.S. Gov't
Research Support, U.S. Gov't, P.H.S.
Sperm Motility
*Sperm-Ovum Interactions
Sperm-Ovum Interactions:. . .

RN 8062-15-5 (lignosulfuric acid); **9005-53-2 (Lignin)**

L4 ANSWER 3 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2002681475 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12399536
TITLE: **Lignosulfonic** acid blocks in vitro fertilization of macaque oocytes when sperm are treated either before or after capacitation.
AUTHOR: Tollner Theodore L; Overstreet James W; Li Ming W; Meyers Stuart A; Yudin Ashley I; Salinas Edward R; **Cherr Gary N**
CORPORATE SOURCE: Division of Reproductive Biology, Department of Obstetrics and Gynecology, University of California, Davis, 94923, USA.
CONTRACT NUMBER: P51-RR00169 (NCRR)
U45-HD-29125 (NICHD)
SOURCE: Journal of andrology, (2002 Nov-Dec) 23 (6) 889-98.
Journal code: 8106453. ISSN: 0196-3635.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200305
ENTRY DATE: Entered STN: 20021122
Last Updated on STN: 20030502
Entered Medline: 20030501

AB **Lignin**-derived macromolecules (LDMs) are biologically active compounds that affect a variety of cell-to-cell interactions including the inhibition of fertilization and embryo development in a number of nonmammalian species. The effect of ligno-sulfonic acid (**LSA**), a highly sulfonated LDM, on cynomolgus macaque sperm-oocyte interaction was evaluated with a zona pellucida binding assay and by in vitro fertilization (IVF). Sperm were treated with **LSA** (1.5 mg/mL) either before washing or after capacitation. Capacitation included centrifugation through 80% Percoll followed by 2 consecutive washes with medium, overnight incubation, and activation with dibutyryl cyclic adenosine monophosphate and caffeine. The zona binding assay was performed using immature oocytes that had adhered to the center of glass "binding chambers." The number of capacitated sperm that attached to the zona over a 3-minute period was recorded. Sperm attachment was significantly inhibited by **LSA** as compared to controls whether treatment occurred after capacitation (92.5%; P <.001) or before washing (82.5%; P <.001). When sperm were treated similarly with fucoidin, a sulfated polysaccharide known to inhibit sperm-oocyte interaction, sperm-zona binding was significantly inhibited by postcapacitation treatment but not by prewash treatment. Treatment of sperm with **LSA** consistently blocked fertilization over 4 IVF cycles both before washing and after capacitation. Fertilization rate for controls was 65% +/- 17%. No **LSA**-treated sperm were observed on the surface of lightly rinsed oocytes after 4 hours of coincubation.

Localization of biotinylated **LSA** showed labeling over the entire sperm surface with the greatest intensity observed over the head and midpiece. **LSA** treatment had no effect on the percentage of motile sperm or quality of sperm motility. Due to the antifertility properties of this nontoxic molecule, **LSA** appears to have potential as a vaginal contraceptive.

TI **Lignosulfonic** acid blocks in vitro fertilization of macaque oocytes when sperm are treated either before or after capacitation.

AU Tollner Theodore L; Overstreet James W; Li Ming W; Meyers Stuart A; Yudin Ashley I; Salinas Edward R; **Cherr Gary N**

AB **Lignin**-derived macromolecules (LDMs) are biologically active compounds that affect a variety of cell-to-cell interactions including the inhibition of fertilization and embryo development in a number of nonmammalian species. The effect of ligno-sulfonic acid (**LSA**), a highly sulfonated LDM, on cynomolgus macaque sperm-oocyte interaction was evaluated with a zona pellucida binding assay and by in vitro fertilization (IVF). Sperm were treated with **LSA** (1.5 mg/mL) either before washing or after capacitation. Capacitation included centrifugation through 80% Percoll followed by 2 consecutive washes with. . . of capacitated sperm that attached to the zona over a 3-minute period was recorded. Sperm attachment was significantly inhibited by **LSA** as compared to controls whether treatment occurred after capacitation (92.5%; P <.001) or before washing (82.5%; P <.001). When sperm. . . inhibit sperm-oocyte interaction, sperm-zona binding was significantly inhibited by postcapacitation treatment but not by prewash treatment. Treatment of sperm with **LSA** consistently blocked fertilization over 4 IVF cycles both before washing and after capacitation. Fertilization rate for controls was 65% +/- 17%. No **LSA**-treated sperm were observed on the surface of lightly rinsed oocytes after 4 hours of coincubation. Localization of biotinylated **LSA** showed labeling over the entire sperm surface with the greatest intensity observed over the head and midpiece. **LSA** treatment had no effect on the percentage of motile sperm or quality of sperm motility. Due to the antifertility properties of this nontoxic molecule, **LSA** appears to have potential as a vaginal contraceptive.

CT Check Tags: Female; Male
Animals
Drug Administration Schedule
*Fertilization: DE, drug effects
*Fertilization in Vitro
***Lignin: AD, administration & dosage**
***Lignin: AA, analogs & derivatives**
Lignin: PK, pharmacokinetics
Macaca fascicularis
*Oocytes: PH, physiology
Research Support, Non-U.S. Gov't
Research Support, U.S. Gov't, P.H.S.
*Sperm Capacitation
Sperm-Ovum. . .

RN 8062-15-5 (lignosulfuric acid); **9005-53-2 (Lignin)**

L4 ANSWER 4 OF 7 MEDLINE on STN
ACCESSION NUMBER: 94152824 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8109744
TITLE: Electrophoretic separation, characterization, and quantification of biologically active **lignin** -derived macromolecules.
AUTHOR: **Cherr G N**; Fan T W; Pillai M C; Shields T; Higashi R M
CORPORATE SOURCE: Bodega Marine Laboratory, University of California at Davis, Bodega Bay 94923.
SOURCE: Analytical biochemistry, (1993 Nov 1) 214 (2) 521-7. Journal code: 0370535. ISSN: 0003-2697.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals

ENTRY MONTH: 199403
ENTRY DATE: Entered STN: 19940330
Last Updated on STN: 19940330
Entered Medline: 19940321

AB Degraded macromolecular **lignin**, which was isolated from the effluents of commercial pulp processing and known to inhibit early development in marine organisms, was separated and characterized using several polyacrylamide gel electrophoresis (PAGE) techniques. This **lignin**-derived macromolecule (LDM), when subjected to native PAGE and stained with alcian blue, appeared as a single band. On sodium dodecyl sulfate (SDS)-PAGE, LDM appeared to consist of two subcomponents with apparent molecular weights of 11 and < 1 kDa. When subjected to isoelectrofocusing--PAGE of pH 3-9, LDM consisted of two major bands in the basic region of the gel, with less distinct banding in the more acidic region. Two-dimensional PAGE of LDM indicated that the higher molecular weight subcomponent corresponded to the more basic constituents, while the lower molecular weight subcomponent corresponded to acidic constituents. When the two subcomponents of LDM were isolated from SDS gels by electroelution and assessed for their effects on successful fertilization and early development, the higher molecular weight subcomponent possessed most of the inhibitory activity. This is the first report of the application of a variety of electrophoretic techniques to both structurally and biologically characterize **lignin**-derived macromolecules.

TI Electrophoretic separation, characterization, and quantification of biologically active **lignin**-derived macromolecules.

AU **Cherr G N**; Fan T W; Pillai M C; Shields T; Higashi R M

AB Degraded macromolecular **lignin**, which was isolated from the effluents of commercial pulp processing and known to inhibit early development in marine organisms, was separated and characterized using several polyacrylamide gel electrophoresis (PAGE) techniques. This **lignin**-derived macromolecule (LDM), when subjected to native PAGE and stained with alcian blue, appeared as a single band. On sodium dodecyl. . . This is the first report of the application of a variety of electrophoretic techniques to both structurally and biologically characterize **lignin**-derived macromolecules.

CT Animals
Biological Assay
*Electrophoresis: MT, methods
Electrophoresis, Gel, Two-Dimensional
Electrophoresis, Polyacrylamide Gel
Isoelectric Focusing
Lignin: AA, analogs & derivatives
***Lignin: AN, analysis**
Research Support, Non-U.S. Gov't

RN **9005-53-2 (Lignin)**

L4 ANSWER 5 OF 7 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 97116128 EMBASE
DOCUMENT NUMBER: 1997116128
TITLE: Inhibition of the sea urchin sperm acrosome reaction by a **lignin**-derived macromolecule.
AUTHOR: Pillai M.C.; Blethrow H.; Higashi R.M.; Vines C.A.; **Cherr G.N.**
CORPORATE SOURCE: G.N. Cherr, University of California at Davis, Bodega Marine Laboratory, P.O. Box 247, Bodega Bay, CA 94923, United States. gncherr@ucdavis.edu.
SOURCE: Aquatic Toxicology, (1997) Vol. 37, No. 2-3, pp. 139-156. Refs: 33
ISSN: 0166-445X CODEN: AQTODG
PUBLISHER IDENT.: S 0166-445X(96)00821-1
COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 046 Environmental Health and Pollution Control
052 Toxicology
LANGUAGE: English
SUMMARY LANGUAGE: English

ENTRY DATE: Entered STN: 970507
Last Updated on STN: 970507

AB The major organic components of effluents from commercial pulping processes are **lignin**-derived macromolecules (LDMs), which have recently been shown to inhibit fertilization and embryonic development in a variety of marine organisms, as well as to exhibit immunostimulating activity in mammalian cells. We conducted studies on the effects of an isolated LDM from bleached kraft mill effluent (BKME), and its sub-components, at the cellular level utilizing the purple sea urchin (Strongylocentrotus purpuratus) sperm acrosome reaction (AR) as an experimental system. The AR is an event that is induced by the egg's jelly coat and is prerequisite for successful fertilization. Sperm were preincubated with increasing concentrations of isolated LDM or electrophoretically purified LDM sub-components, followed by addition of isolated egg jelly to induce the AR in vitro. These LDM preparations significantly inhibited the AR as assessed by fluorescence (utilizing the rhodamine-conjugated phallicidin) and transmission electron microscopy. Preincubation of sperm with LDM did not have any effect on sperm motility. The level of AR inhibition was comparable to that observed in experiments assessing successful fertilization. The ability of LDM to inhibit jelly induced AR was overcome by the calcium ionophores A23187 and ionomycin. In addition, LDM was shown to inhibit the normal increase in intracellular calcium (Ca++) associated with induction of the AR. When eggs were preincubated with LDM prior to addition of unexposed sperm, no effect on fertilization was observed, indicating that LDM specifically affects sperm function during fertilization. Fine structural studies, utilizing biotinylated LDM, confirmed LDM's specificity and revealed that its binding was restricted to the plasma membrane domain of the sperm head. The present observations on the inhibition of the AR by LDM is consistent with our hypothesis that this macromolecule inhibits the AR by blocking egg jelly interaction with the sperm surface, thus inhibiting ionic events such as increases in intracellular calcium. Our present approach also demonstrates that echinoderm sperm functions can be used as a model system for the investigation of the mode of action of toxicants at the sub-cellular level.

TI Inhibition of the sea urchin sperm acrosome reaction by a **lignin**-derived macromolecule.

AU Pillai M.C.; Blethrow H.; Higashi R.M.; Vines C.A.; **Cherr G.N.**

AB The major organic components of effluents from commercial pulping processes are **lignin**-derived macromolecules (LDMs), which have recently been shown to inhibit fertilization and embryonic development in a variety of marine organisms, as. . .

CT Medical Descriptors:
*acrosome reaction
*effluent toxicity
animal cell
article
controlled study
fluorescence
macromolecule
male
nonhuman
priority journal
sea urchin
transmission electron microscopy
***lignin**
calcimycin
ionomycin

RN (**lignin**) 9005-53-2; (calcimycin) 52665-69-7; (ionomycin) 56092-81-0

L4 ANSWER 6 OF 7 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 93005292 EMBASE
DOCUMENT NUMBER: 1993005292
TITLE: A polar high molecular mass constituent of bleached kraft mill effluent is toxic to marine organisms.
AUTHOR: Higashi R.M.; **Cherr G.N.**; Shenker J.M.; Macdonald

J.M.; Crosby D.G.
CORPORATE SOURCE: Bodega Marine Laboratory, University of California, Box 247,Bodega Bay, CA 94923, United States
SOURCE: Environmental Science and Technology, (1992) Vol. 26, No. 12, pp. 2413-2420.
ISSN: 0013-936X CODEN: ESTHAG
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 046 Environmental Health and Pollution Control
052 Toxicology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 930124
Last Updated on STN: 930124

AB A high molecular mass constituent (HMM) of whole bleached kraft mill effluent (BKME), which represents the majority of toxicity to early life stages of marine animals and a plant, has been isolated and partially characterized. BKME was subjected to fractionation coupled with toxicity testing to determine the toxicity of each isolated fraction. The toxic mode of action was also tracked throughout the fractionation using echinoderm sperm motility as an indicator. While most fractions inhibited sperm motility, BKME and HMM did not. Yet, HMM exhibited most of the toxicity of BKME to echinoderm sperm, mollusc embryos, larval sole, and kelp gametophytes. HMM was soluble only in water and appeared to be free of the resin and fatty acids or chlorinated aromatic compounds that are implicated in freshwater acute toxicity of BKME to salmonid fish. Structural analyses indicate that this polar, high molecular mass constituent was devoid of aromatic structure and had other characteristics indicative of **lignin** breakdown products.

AU Higashi R.M.; **Cherr G.N.**; Shenker J.M.; Macdonald J.M.; Crosby D.G.

AB . . . analyses indicate that this polar, high molecular mass constituent was devoid of aromatic structure and had other characteristics indicative of **lignin** breakdown products.

L4 ANSWER 7 OF 7 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
ACCESSION NUMBER: 1996:399339 BIOSIS
DOCUMENT NUMBER: PREV199699121695
TITLE: A **lignin**-derived macromolecule inhibits gamete interaction by adhering echinoderm and teleost sperm surfaces.
AUTHOR(S): Vines, C.; Pillai, M. C.; **Cherr, G. N.**
CORPORATE SOURCE: Univ. Calif., Davis, CA, USA
SOURCE: Marine Environmental Research, (1996) Vol. 42, No. 1-4, pp. 138.
Meeting Info.: 8th International Symposium on Pollutant Responses in Marine Organisms. Pacific Grove, California, USA. April 2-5, 1995.
CODEN: MERSDW. ISSN: 0141-1136.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 3 Sep 1996
Last Updated on STN: 3 Sep 1996

TI A **lignin**-derived macromolecule inhibits gamete interaction by adhering echinoderm and teleost sperm surfaces.
AU Vines, C.; Pillai, M. C.; **Cherr, G. N.**
IT Major Concepts
Development; Physiology; Reproductive System (Reproduction); Toxicology
IT Chemicals & Biochemicals
LIGNIN
RN 9005-53-2 (**LIGNIN**)

```
=> s l6(l)(sperm# or contracept?)
         42485 SPERM#
         16202 CONTRACEPT?
L7          12 L6(L)(SPERM# OR CONTRACEPT?)

=> d ibib 1-12

L7   ANSWER 1 OF 12  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:        2005:147459  CAPLUS
DOCUMENT NUMBER:         142:256339
TITLE:                   Reaction of heme containing proteins and enzymes with
                         hydroperoxides: The radical view
AUTHOR(S):               Svistunenko, Dimitri A.
CORPORATE SOURCE:        Department of Biological Sciences, University of
                         Essex, Colchester, Essex, CO4 3SQ, UK
SOURCE:                  Biochimica et Biophysica Acta (2005), 1707(1), 127-155
                         CODEN: BBACAQ; ISSN: 0006-3002
PUBLISHER:               Elsevier B.V.
DOCUMENT TYPE:           Journal; General Review
LANGUAGE:                English
REFERENCE COUNT:         170   THERE ARE 170 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
                               FORMAT

L7   ANSWER 2 OF 12  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:        2003:749402  CAPLUS
DOCUMENT NUMBER:         140:39391
TITLE:                   ESP13.2, a member of the β-defensin family, is a
                         macaque sperm surface-coating protein involved in the
                         capacitation process
AUTHOR(S):               Yudin, Ashley I.; Tollner, Theodore L.; Li, Ming-Wen;
                         Treece, Cathy A.; Overstreet, James W.; Cherr, Gary N.
CORPORATE SOURCE:        Department of Obstetrics and Gynecology, Division of
                         Reproductive Biology, Bodega Marine Laboratory,
                         University of California, Davis, Davis, CA, 94923, USA
SOURCE:                  Biology of Reproduction (2003), 69(4), 1118-1128
                         CODEN: BIREBV; ISSN: 0006-3363
PUBLISHER:               Society for the Study of Reproduction
DOCUMENT TYPE:           Journal
LANGUAGE:                English
REFERENCE COUNT:         61    THERE ARE 61 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7   ANSWER 3 OF 12  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:        2003:551175  CAPLUS
DOCUMENT NUMBER:         139:106471
TITLE:                   Sulfonated compounds as barrier contraceptives
INVENTOR(S):             Cherr, Gary N.; Salinas, Edward R.
PATENT ASSIGNEE(S):      The Regents of the University of California, USA
SOURCE:                  U.S. Pat. Appl. Publ., 20 pp.
                         CODEN: USXXCO
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     US 2003134803         A1    20030717    US 2002-76902           20020213
     WO 2003059197         A2    20030724    WO 2003-US1324          20030114
     WO 2003059197         A3    20040226
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
```

KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: US 2002-349144P P 20020115
US 2002-76902 A 20020213

L7 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:70433 CAPLUS
DOCUMENT NUMBER: 139:3026
TITLE: Real-time observations of individual macaque sperm undergoing tight binding and the acrosome reaction on the zona pellucida
AUTHOR(S): Tollner, Theodore L.; Yudin, Ashley I.; Cherr, Gary N.; Overstreet, James W.
CORPORATE SOURCE: Division of Reproductive Biology, University of California, Davis, CA, 95616, USA
SOURCE: Biology of Reproduction (2003), 68(2), 664-672
CODEN: BIREBV; ISSN: 0006-3363
PUBLISHER: Society for the Study of Reproduction
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:909288 CAPLUS
DOCUMENT NUMBER: 138:331859
TITLE: **Lignosulfonic acid** blocks in vitro fertilization of macaque oocytes when **sperm** are treated either before or after capacitation
AUTHOR(S): Tollner, Theodore L.; Overstreet, James W.; Li, Ming W.; Meyers, Stuart A.; Yudin, Ashley I.; Salinas, Edward R.; Cherr, Gary N.
CORPORATE SOURCE: Division of Reproductive Biology, Department of Obstetrics and Gynecology, University of California, Davis, CA, 94923, USA
SOURCE: Journal of Andrology (2002), 23(6), 889-898
CODEN: JOAND3; ISSN: 0196-3635
PUBLISHER: American Society of Andrology, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:288126 CAPLUS
DOCUMENT NUMBER: 126:273365
TITLE: Inhibition of the sea urchin **sperm** acrosome reaction by a **lignin**-derived macromolecule
AUTHOR(S): Pillai, M. C.; Blethrow, H.; Higashi, R. M.; Vines, C. A.; Cherr, G. N.
CORPORATE SOURCE: Sonoma State University, Rohnert Park, CA, 94928, USA
SOURCE: Aquatic Toxicology (1997), 37(2,3), 139-156
CODEN: AQTODG; ISSN: 0166-445X
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1992:606563 CAPLUS
DOCUMENT NUMBER: 117:206563
TITLE: A polar high molecular mass constituent of bleached kraft mill effluent is toxic to marine organisms
AUTHOR(S): Higashi, Richard M.; Cherr, Gary N.; Skenker, Jonathan M.; Macdonald, Jeffrey M.; Crosby, Donald G.
CORPORATE SOURCE: Bodega Mar. Lab., Univ. California, Bodega Bay, CA,

94923, USA
SOURCE: Environmental Science and Technology (1992), 26(12), 2413-20
CODEN: ESTHAG; ISSN: 0013-936X
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 8 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1981:133586 CAPLUS
DOCUMENT NUMBER: 94:133586
TITLE: Effects of a drilling fluid on the development of a teleost and an echinoderm
AUTHOR(S): Crawford, Richard B.; Gates, Jonathan D.
CORPORATE SOURCE: Dep. Biol., Trinity Coll., Hartford, CT, 06106, USA
SOURCE: Bulletin of Environmental Contamination and Toxicology (1981), 26(2), 207-12
CODEN: BECTA6; ISSN: 0007-4861
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 9 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1977:74868 CAPLUS
DOCUMENT NUMBER: 86:74868
TITLE: Lipid and other nonpetrochemical raw materials
AUTHOR(S): Scholnick, Frank
CORPORATE SOURCE: East. Reg. Res. Cent., Philadelphia, PA, USA
SOURCE: Surfactant Science Series (1976), 7, Pt. 1, 87-109
CODEN: SFSSA5; ISSN: 0081-9603
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

L7 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1967:29521 CAPLUS
DOCUMENT NUMBER: 66:29521
TITLE: Sulfonated urea-formaldehyde polymers
PATENT ASSIGNEE(S): Nopco Chemical Co.
SOURCE: Brit., 12 pp.
CODEN: BRXXAA
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1049096		19661123		
PRIORITY APPLN. INFO.:			US	19620927

L7 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1965:15741 CAPLUS
DOCUMENT NUMBER: 62:15741
ORIGINAL REFERENCE NO.: 62:2878c-e
TITLE: The influence of resin components on the bonding properties of polychloroprene adhesives
AUTHOR(S): Fischer, W.
CORPORATE SOURCE: Forschungsinst. Schuhherstellung, Pirmasens, Germany
SOURCE: Adhaesion (1964), 8(9), 356-60
CODEN: ADHEA2; ISSN: 0001-8198
DOCUMENT TYPE: Journal
LANGUAGE: German

L7 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1956:38286 CAPLUS
DOCUMENT NUMBER: 50:38286
ORIGINAL REFERENCE NO.: 50:7447a-d
TITLE: Tall oil pitch-phosphorus sulfide reaction products and metallic salts as dispersants for lubricating oils
INVENTOR(S): Hook, Edwin O.; Beegle, Lindley C.

PATENT ASSIGNEE(S): American Cyanamid Co.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2731415		19560117	US	